the Leaves being formed out of the ſubſtance of the Root, as a Chick out of the *Albumen*; in the mean while the whole decreaſing in weight, as in the aforeſaid *Aloe*; as 'tis manifeſt by many Experiments made by me.

An Extract
Of a Letter, written by Mr. Richard Towneley *to Dr.* Croon, *touching the Invention of* Dividing a Foot *into many thouſand parts, for* Mathematical *purpoſes.*

FInding in one * of the laſt *Philoſophical Tranſactions*, how much M. *Auzout* eſteems his Invention of dividing a Foot into near 30000 parts, and taking thereby Angles to a very great exactneſs; I am told, I ſhall be look't upon as a great Wronger of our Nation, ſhould I not let the World know, that I have, out of ſome ſcatter'd Papers and Letters, that formerly came to my hands of a Gentleman of theſe Parts, one Mr. *Gaſcoigne*, found out, That before our late Civil Wars, he had not only deviſed an Inſtrument of as great a power, as M. *Auzout*'s, but had alſo for ſome Years made uſe of it, not only for taking the Diameters of the Planets, and Diſtances upon Land; but had farther endeavour'd, out of its preciſeneſs, to gather many Certainties in the Heavens; amongſt which, I ſhall only mention one, *viz.* The finding the *Moons Diſtance*, from two Obſervations, of her *Horizontal* and *Meridional Diameters:* Which I the rather mention, becauſe the *French Aſtronomer* eſteems himſelf the firſt that took any ſuch Notice, as thereby to ſettle the *Moons Parallax*. For, our Countrey-man fully conſider'd it before, and imparted it to an Acquaintance of his, who thereupon propoſed to him the Difficulties that would ariſe in the Calculation; with conſiderations upon the ſtrange Niceties, neceſſary to give him a certainty of what he deſired. The very Inſtrument he firſt made I have now by me, and two others more perfected by him; which doubtleſs he would have infinitely mended, had he not been ſlain unfortunately in His late Majeſties Service. He had a *Treatiſe*

* Vid. Numb. 21. p. 373.

tiſe of Opticks ready for the *Preſs*; but though I have uſed my utmoſt endeavour to retrieve it, yet I have in that point been totally unſucceſful: But ſome looſe Papers and Letters I have, particularly about this Inſtrument for taking of Angles, which was far from perfect. Nevertheleſs, I find it ſo much to exceed all others, that I have uſed my Endeavors to make it exact, and eaſily tractable; which above a Year ſince I effected to my own deſire, by the help of an Ingenious and Exact Watchmaker in theſe Parts: Since which time, I have not altogether neglected it, but employed it particularly in taking the *Diſtances* (as occaſion ſerved) of the *Circum-jovialiſts*, towards a perfect ſetling their Motion. I ſhall only ſay of it, That it is ſmall, not exceeding in weight, nor much in bigneſs, an ordinary Pocket-Watch, exactly marking above 40000 Diviſions in a *Foot*, by the help of two *Indexes*; the one ſhewing hundreds of Diviſions, the other, Diviſions of the hundred; every laſt Diviſion, in my ſmall one, containing $\frac{1}{10}$ of an Inch; and that ſo preciſely, that, as I uſe it, there goes above $2\frac{1}{2}$ Diviſions to a *Second*. Yet I have taken *Land-Angles* ſeveral times to one Diviſion, though (for the Reaſon mention'd by M. *Auzout*) it be very hard to come to that Exactneſs in the Heavens, *Viz.* The ſwift motion of the *Planets*. Yet, to remedy that Fault, I have deviſed a *Reſt*, in which I find no ſmall advantage, and not a little pleaſing thoſe perſons who have ſeen it, being ſo eaſie to be made, and by the Obſerver manag'd without the help of another: Which ſecond Convenience, my yet nameleſs Inſtrument hath in great perfection, and is, by reaſon of its ſmalneſs and ſhape, eaſily appliable to any Teleſcope. Sir, If you think this Invention, thus imp ov'd, worthy to be taken notice of by the Curious, you may * command a more perfect Deſcription of it, or any of the Obſervations, either M. *Gaſcoigne*, or my ſelf have made with it.

* Care is taken, to get both this *Deſcription*, and the *Obſervations*, from M. *Townly*.